Title: Hyaluronan: A novel sputum marker for the screening and diagnosis of lung cancer patients

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Body: INTRODUCTION: Hyaluronic Acid (HA) is elevated in several cancers, but there is no data regarding its concentration in the sputum of lung cancer patients. In this study, we examined the HA concentrations in the sputum and its impact on the screening and diagnosis of lung cancer patients. METHODS: HA was examined in sputum samples of 90 lung cancer patients, 25 COPD patients and 15 healthy controls. All the patients and healthy controls selected underwent a sputum induction. Sputum samples were incubated with urea 7M at 60°C and afterwards incubated with a proteolytic enzyme. The levels of HA were measured by a noncompetitive ELISA-like fluorometric assay. RESULTS: A significant different concentration pattern of HA in the sputum was found among lung cancer, COPD and healthy individuals (p<0.001; Fig1A). ROC curve between lung cancer and healthy volunteers furnished an area of 0.821 (0.727–0.915). Assuming a cut off value of 31.44ng/mg, the specificity was 100% and the sensitivity was 51% (Fig1B). ROC curve to distinguish COPD patients from lung cancer patients showed an area of 0.698 (0.600-0.797) and the cut off value of 48.3ng/mg presented 100% of specificity and 33% of sensitivity (Fig1C).

CONCLUSIONS: The results presented suggest a promising role of HA quantification in the sputum as a novel screening and diagnostic marker for differentiating normal and other type of fibrotic pulmonary problems from lung cancer patients.